New Jersey Department of Environmental Protection
Division of Water Quality
Bureau of Point Source Permitting Region 2

FACT SHEET

Masterfile #: Varies **PI #:** Varies

This fact sheet sets forth the principle facts and the significant factual, legal, and policy considerations examined during preparation of the draft master general permit. This action has been prepared in accordance with the New Jersey Water Pollution Control Act and its implementing regulations at N.J.A.C. 7:14A-1 et seq. - The New Jersey Pollutant Discharge Elimination System (NJPDES).

PERMIT ACTION: Surface Water Renewal Action
Master General Permit

1 Description of Master General Petroleum Product Clean-up Permit:

Pursuant to N.J.A.C. 7:14A-6.13(b)4 of the NJPDES Regulations, the Department has determined that the petroleum product clean-up category of point sources require the same effluent limitations or operating conditions, require the same or similar monitoring conditions, and are more appropriately controlled under a general permit than under an individual permit. Given that many facilities with petroleum product contamination contain similar contaminants, the Department has issued one master general permit to regulate these wastestreams. Issuance of a master general permit serves to simplify and streamline the NJPDES permitting process for these similar types of discharges.

Applicants must request authorization to be covered under the general permit by submitting appropriate NJPDES application forms. If the New Jersey Department of Environmental Protection (hereafter "the Department") determines that the individual facility meets the eligibility requirements of the master general petroleum product clean up (GPPC) permit, then an individual authorization is issued to that facility.

Any individual authorization issued under the GPPC permit is given two NJPDES numbers. The NJPDES number on the individual authorization page will be specific to the individual facility whereas the NJPDES number NJ0102709 of the master general permit is for the master GPPC permit.

2 Name and Address of the Applicant:

Indicated on individual authorizations.

3 Name and Address of the Facility/Site:

Indicated on individual authorizations.

4 Discharge Location Information and Receiving Waterbody Classification:

The receiving waterbody classification and outfall name for each discharge is indicated on the individual authorization page for each facility. A copy of the appropriate section of a USGS quadrangle map indicating the location of the facility and discharge point(s) is also included in each individual authorization.

Receiving waterbody classifications are obtained from N.J.A.C. 7:9B-1.1 et seq., the New Jersey Surface Water Quality Standards (NJSWQS). In accordance with the NJSWQS, saline waters are considered to be those waters classified as SE1, SE2, SE3, or SC and fresh waters are considered to be those waters classified as FW1 or FW2 waters. For waters with two classifications (e.g. FW2-NT/SE1), the waterbody is defined as saline if the result of the salinity measurement exceeds 3.5 parts per thousand at mean high tide or as fresh if the salinity is less than or equal to 3.5 parts per thousand, in accordance with N.J.A.C. 7:9B-1.4. With respect to the Delaware River, where the

classifications are specified as zones, the Delaware Memorial Bridge is the approximate location of the interface between fresh and saline waters; therefore, discharges north of the Delaware Memorial Bridge will be considered to be discharging to fresh waters and dischargers south of the Delaware Memorial Bridge will be considered to be discharging to saline waters.

5 Type and Quantity of the Wastes or Pollutants:

The Permit Summary Table near the end of this fact sheet contains a summary of the quantity and quality of pollutants treated and discharged from the facilities covered under this GPPC permit. Effluent data was obtained from the Monitoring Report Forms for the time period specified in the table for all facilities covered under the existing GPPC permit.

Residuals/Sludge Conditions:

All treatment works with a discharge regulated under N.J.A.C. 7:14A must have permits that implement applicable technical standards for residuals management. Generally, the permit issued to the treatment works generating the residual will include applicable residual quality monitoring as well as other general conditions required by N.J.A.C. 7:14A-6. In addition, the permit may include conditions related to any aspect of residual management developed on a case-by-case basis where the Department determines that such conditions are necessary to protect public health and the environment.

Typically, spent granular activated carbon generated by the treatment systems at these types of facilities is regenerated for further use and is not considered to be a sludge for purposes of reporting under the Sludge Quality Assurance Regulations (SQAR, N.J.A.C. 7:14C). Bag filters and cartridge filters removed from these treatment systems are also not considered to be sludges. However, these materials are considered to be residuals as defined in the New Jersey Pollutant Discharge Elimination System regulations (NJPDES, N.J.A.C. 7:14A). Consequently, only general residuals conditions have been included in Part II of the permit. Residuals removed that are manifested as hazardous waste are exempt from SQAR as provided for under N.J.A.C 7:14C-1.13(b)1.iii. Should there be any significant change in residual use or disposal practices, the permittee shall give written notification to the Department in accordance with Part II, General Conditions, Section B.4.a.

The documents listed below have been used to establish the residual conditions of the Draft Permit:

a. United States Environmental Protection Agency “Standards for the use or disposal of sewage sludge” (40 CFR Part 503),
b. "New Jersey Pollutant Discharge Elimination System” (N.J.A.C. 7:14A),
c. Technical Manual for Residuals Management, May 1998,
d. USEPA Part 503 Implementation Guidance, EPA 833-R-95-001, October 1995. This document is a compilation of federal requirements, management practices and EPA recommended permit conditions for sewage sludge use and management practices,
e. USEPA A Plain English Guide to the EPA Part 503 Biosolids Rule, EPA/832/R-93/003, September 1994,
f. New Jersey “Statewide Sludge Management Plan”, November 1987 and
g. New Jersey “Sludge Quality Assurance Regulations” (SQAR), N.J.A.C. 7:14C.

6 Description of Facilities Covered by the Master GPPC Master Permit:

Authorized permittees will discharge only decontaminated groundwater resulting from the remediation of contaminated groundwater associated with petroleum products. Dewatering and pump test discharges that have petroleum product contamination are also eligible under this master permit. This permit authorizes the discharge of these point sources into surface waters of the State or separate storm sewers, except those waters classified as FW-1 and PL (Pinelands), in compliance with the limitations and conditions described below and in a manner that will not

cause violation of the NJSWQS of N.J.A.C. 7:9B-1.1 et seq. and the Federal Surface Water Quality Standards, 40 CFR 131.

All facilities considered eligible under this master general permit are considered minor facilities by the Department in accordance with the United States Environmental Protection Agency (EPA) rating criteria.

Effluent limitations are dependent on the type of products discharged, the duration of the effluent discharge, the ultimate receiving waterbody, and the nature of the remedial activity. Therefore, this permit contains five effluent limitation tables to address various concerns. The tables are as follows:

Table A: Remediation discharges into eligible waters classified as FW2-NT, FW2-TM, FW2-TP, SE, or SC where strictly petroleum related constituents are present.

Table B: Remediation discharges where strictly petroleum related constituents are present for specific waterbodies where a potable water intake is located on the receiving waterbody (given certain dilution criteria); where there are potable groundwater wells that are recharged by the receiving waters; or where shellfish harvesting occurs on the receiving waterbody.

Table C: Remediation discharges into waters classified as C1 (Category 1) where strictly petroleum related constituents are present.

Table D: Remediation discharges into waters classified as FW2-NT, FW2-TM, FW2-TP, SE or SC where other metals, volatile organic, acid extractables or base-neutral compounds are present in addition to petroleum related constituents.

Table E: Short term dewatering or pump test discharges into waters classified as FW2-NT, FW2-TM, FW2-TP, SE or SC where strictly petroleum related constituents are present.

Petroleum products are defined as leaded gasoline, unleaded gasoline, aviation fuel, jet fuel, kerosene, diesel fuel, number 1 fuel oil, number 2 fuel oil, number 4 fuel oil, number 5 fuel oil and number 6 fuel oil. If additional site specific constituents, such as gasoline additives not addressed in this permit, are contained in the petroleum product discharge, the Department will make a case specific determination of the applicant's eligibility for this general permit. If the Department determines that an applicant is not eligible for this general permit due to site specific constituents, the applicant may pursue an individual permit.

7 Designation of Outfalls:

The table(s) and effluent limits, which are appropriate to the site-specific conditions of the discharge activity, will be specified for each individual authorization on the individual authorization page. The outfall designation will reflect which table is utilized. For example, if a facility qualifies to discharge under Table C, the outfall will be specified as discharge serial number (DSN) 001C on the individual authorization page. This will enable the Department to identify which table is applicable as well as enable the Department to track the different discharge types in the Monitoring Report form data base.

More than one table may be appropriate for a particular facility provided different discharge activities are proposed. In the event that more than one table is applied in the individual authorization, the outfalls will be assigned different letters following the outfall number as well as a different numerical outfall (i.e. 001A and 002E). This will enable both the Department and the permittee to differentiate between the different activities as well as the different permit requirements and corresponding monitoring report form information. Consider an example where a permittee has gasoline contamination and proposes to perform a dewatering activity and a remediation activity which will be discharged to an FW2-NT waterbody. Both discharge activities will be routed through the same physical outfall; however, the dewatering activity will occur first followed by the remediation activity. For this example, the remediation activity may be authorized for discharge through DSN 001A where the conditions of Table A of the

master GPPC permit would apply, whereas the dewatering activity may be authorized for discharge through DSN 002E where the conditions of Table E of the master GPPC permit would apply. Even though both discharges may be through the same physical outfall, it is essential that the different permit requirements are tracked under different outfall names in the individual authorization such as 001A and 002E.

8 History of GPPC Permit:

The first master GPPC permit was issued on October 29, 1993. This GPPC permit was tracked as "Category B4B" in the Department's data base. This October 29, 1993 permit served to replace the General Groundwater Fuel Clean-up (GFC) permit issued on June 2, 1988. The GFC permit (Category B4) was limited to discharges resulting from gasoline contamination only and did not cover contamination by other petroleum products.

The October 29, 1993 master GPPC permit authorized the discharge of treated groundwater contaminated by gasoline as well as contamination by other petroleum products. This permit authorized the discharge of treated groundwater resulting from remediations, dewatering projects and pump tests.

The October 29, 1993 master GPPC permit was renewed on October 28, 1998. The October 28, 1998 master GPPC permit contained several differences from the October 29, 1993 master permit. Some of the requirements included in the October 28, 1998 permit are as follows:

- Effluent limitations and/or monitoring requirements for Methyl *tert* butyl ether (MTBE) and *tert* butyl alcohol (TBA);

- Remediation discharges are authorized where other metals, volatile organics, acid extractables or base/neutral compounds are present in addition to petroleum related constituents;

- Biomonitoring requirements (i.e. whole effluent toxicity) are included for any remediation discharge where metals are present in addition to petroleum related constituents.

This master GPPC renewal permit is essentially the same as the October 28, 1998 master GPPC permit with the exception of a few minor differences. These differences include: imposition of a more stringent lead limit; inclusion of a TBA monitoring requirement for influent to the treatment system for all tables; and discontinuation of the authorization to discharge to Pinelands waters under Table C. The Pinelands Commission had requested that the Department not continue authorization to discharge to Pinelands waters by way of a general permit.

9 Background to the Selection of Regulated Parameters for all Tables:

A summary of effluent data is included in the Permit Summary Tables at the end of this Fact Sheet. In addition, influent data (untreated wastewater) was required in the applications for individual authorizations under the master GPPC permit and was considered as part of the decision making in this renewal permit. Both effluent and influent data was considered in the Department's determination regarding which parameters to regulate. In addition, the Department considered the parameters included in the existing GPPC permit, in accordance with N.J.A.C. 7:14A-13.19, as well as information contained in available literature.

Flow, pH, Total Organic Carbon, Total Suspended Solids, and Petroleum Hydrocarbons

As discussed further in the section for Table A, the Department has retained effluent limitations and/or monitoring requirements for **flow**, **pH**, **total organic carbon**, **total suspended solids**, and **petroleum hydrocarbons** in the master GPPC permit renewal. The majority of these parameters are generally regulated in all NJPDES/DSW permits throughout the State of New Jersey for all types of wastewater discharges.

Total organic carbon, total suspended solids and petroleum hydrocarbons are consistently present at detectable levels in untreated groundwater as evidenced by recent renewal application data for requests for authorization under the master GPPC permit renewal. Although DMR data summarized previously shows that available treatment technology is consistently capable of treating levels of total organic carbon, total suspended solids and petroleum hydrocarbons below the effluent limitations imposed in the master GPPC permit renewal, these compounds are still present in the effluent in detectable levels; therefore, limiting such compounds is appropriate pursuant to N.J.A.C. 7:14A-2.1(d).

Benzene

Effluent limitations and monitoring requirements have been retained for benzene from the existing GPPC permit because benzene, ethylbenzene, toluene and xylene constituents are consistently present in petroleum products based on available influent and effluent data and based on relevant literature. Benzene(B), toluene(T), and xylene(X) are present in over 99% of automotive gasolines.[1] Literature on the components of other petroleum products also consistently notes the presence of benzene, ethylbenzene(E), toluene, and xylene where, in terms of groundwater contaminated with petroleum products, any one of these constituents can be the predominant constituent.[2,3,4]

As discussed in the existing master GPPC permit, benzene is singled out as an appropriate indicator parameter for BTEX constituents and other volatile organic compounds because of its treatability characteristics. Two of the most widely used technologies for the treatment of groundwater contaminated with petroleum products are air stripping and granular activated carbon. Because compounds with lower Henry's Law Constants are more difficult to remove by air stripping than compounds with higher Henry's Law Constants, the compound with the lowest Henry's Law Constant will generally be the limiting compound where multiple volatile organic compounds are present.[2] In addition to Henry's Law Constants, generally the higher the solubility and boiling point of a constituent in water, the more difficult it is to remove that constituent from the water using air stripping.[2] Benzene has a relatively low Henry's Law Constant and a relatively high solubility in water at a consistent temperature; therefore, benzene is an appropriate indicator parameter for the treatment efficiency of groundwater contaminated with petroleum products. Considering treatment with granular activated carbon, benzene has a low mean adsorptive capacity and is therefore expected to be one of the first constituents to "break-through" the carbon or appear in the effluent when the adsorptive capacity is exhausted.[2] For this reason, benzene is an appropriate indicator parameter for treatment with granular activated carbon. In addition to mean adsorption capacity, constituents with a high boiling point in water also "break through" carbon first thereby further supporting the use of benzene as a major indicator parameter for the control of pollutants from petroleum product contaminated groundwater.[2]

In sum, in order to control the discharge levels of benzene, ethylbenzene, toluene and xylene, an effluent limitation has been retained for benzene.

Naphthalene

Effluent limitations and monitoring requirements have been retained for naphthalene from the existing GPPC permit because this constituent is consistently present in petroleum products based on both GPPC permit renewal application data as well as a broad literature review.[2,3,4] Naphthalene can be present in both gasoline as well as fuel oils, although it is typically present in higher concentrations in fuel oil. Naphthalene has a very low Henry's Law Constant and is therefore more difficult to remove by air stripping than most compounds including benzene.[2] Considering adsorptive capacities, benzene is expected to "break-through" the granular activated carbon before naphthalene; however, because benzene may not be present in fuel oils in large quantities, it is still necessary to limit naphthalene to ensure that the removal efficiency of treatment is adequate.[2]

Other Organics Which May Be Present in Petroleum Products

Other compounds indicated as present in a random sampling of GPPC renewal applications include phenanthrene, acenapthene, fluorene, methylene chloride, di N butyl phthalate, 2,4 dimethyl phenol, bis 2 ethyl hexyl phthtalate and phenol. Although these compounds may be present on a case-by-case basis in petroleum products, the Department has not imposed effluent limitations and/or monitoring requirements for any of these compounds as they are not

consistently present and when they are present, it is in trace amounts. In addition, it is expected that limiting benzene and napthalene will serve to control the discharge of these compounds as benzene and naphthalene are present at significantly higher levels and are comparatively more difficult to treat based on treatability information.

Total Recoverable Lead

Effluent limitations and monitoring requirements have been retained for total recoverable lead on a case-by-case basis. The applicability of the lead limitation and monitoring requirement is dependent on whether or not the groundwater is contaminated with leaded automotive gasoline or if detectable levels of lead are indicated in the NJPDES GPPC permit application, in levels comparable to or in excess of the New Jersey Surface Water Quality Standards (NJSWQS) at N.J.A.C. 7:9B-1.1 et seq..

Methyl *tert* Butyl Ether

Effluent limitations and monitoring requirements have been retained for methyl *tert* butyl ether (MTBE) in the master GPPC renewal. MTBE is a fuel oxygenate compound which is used to increase the octane rating of gasoline and has been added to meet the requirements of the Clean Air Act.[5] Since the early 1990's MTBE has been added to gasoline to meet Federal Clean Air Act requirements in wintertime oxygenated gasoline (starting in 1992) and in federal reformulated gasoline (starting in 1995).[6] MTBE has also been used in gasoline as an octane enhancer to replace lead [7].

MTBE, a colorless, flammable liquid with a turpentine-like odor, is highly water soluble, highly flammable and extremely volatile. MTBE does not adsorb to vadose zone materials and, along with its high vapor pressure, moves quickly through soil columns. MTBE has higher water solubility, exhibits lower adsorption to soil, and is more resistant to chemical degradation than the other common groundwater contaminants from gasoline - benzene, toluene, ethylbenzene, and xylene (BTEX compounds).[7] Its water solubility of about 50 g/L makes it about 25 more times more soluble than benzene, the most soluble of the BTEX constituents.[7] This implies that MTBE should be more readily leached to groundwater, and transported more quickly and further in groundwater, than the BTEX compounds.[7]

Because of its low Henry's Law Constant, MTBE is difficult to remove once it is made soluble in groundwater.[8] The Henry's law constant determines the tendency of a chemical to transfer from air to water or vice versa.[7] The Henry's law constant for MTBE is low relative to the BTEX compounds.[7] The relatively high solubility of MTBE, in comparison with BTEX compounds, indicates that MTBE is not as easily stripped from water using air stripping technology.[9] However it is technically feasible to remove MTBE from groundwater by air stripping if the air/water ratio is higher than for BTEX.[9] Air stripping, to remove some MTBE and most of the other volatile organic compounds, followed by activated carbon, to remove the remainder, can be the most efficient treatment approach in some cases.[7]

Recent GPPC renewal application data shows that MTBE is often detected in untreated groundwater. Modern reformulated gasoline is comprised of up to 15% of MTBE which can result in high concentrations of MTBE in untreated groundwater.

Therefore, based on its widespread use as a gasoline blending component; its potential presence at high concentrations; its treatability characteristics; and its presence in untreated groundwater application data; the Department has determined that it is appropriate to continue to impose requirements for MTBE.

***tert* Butyl Alcohol**

A monitoring requirement has been retained for *tert* butyl alcohol (TBA). TBA is also a fuel oxygenate compound used as an octane booster in gasoline, although it is not as widely used as MTBE.[6] TBA is also a metabolite of MTBE.[9, 10]

Recent GPPC renewal application data shows that TBA can be present in untreated groundwater as well as in treated effluent. In addition, because TBA is a metabolite of MTBE, TBA could be present in greater quantities in the effluent from the treatment works as compared to the influent to the treatment works. TBA also has a high solubility and low Henry's Law Constant indicating that it is difficult to treat. Therefore, in order to continue to assess the effluent levels present, monitoring and reporting for TBA has been imposed for all tables. The Department has also imposed an influent requirements for TBA which may be used in the future to develop a percent removal limit.

References:

1 – US EPA. April 1988. Cleanup of Releases from Petroleum Underground Storage Tanks: Selected Technologies. Washington DC.: (EPA/530/UST-88-001).
2 - US EPA. June 1989. Model NPDES Permit for Discharges Resulting from the Cleanup of Gasoline Released from Underground Storage Tanks. Washington DC.
3 - Kramer W., and T. Hayes. 1987. New Jersey Geological Survey Technical Memorandum 87-5. "Water Soluble Phase of Gasoline: Results of a Laboratory Mixing Experiment". New Orleans, LA: National Meeting for the American Public Health Association.
4 - Kramer W., and T. Hayes. 1987. New Jersey Geological Survey Technical Memorandum 87-4. "Water Soluble Phase of Number 2 Fuel Oil: Results of a Laboratory Mixing Experiment". New Orleans, LA: National Meeting for the American Public Health Association.
5 - New Jersey Drinking Water Quality Institute. September 1994. Maximum Contaminant Level Recommendations for Hazardous Contaminants in Drinking Water. Page A-4.
6 - California Environmental Protection Agency. April 1997. MTBE Briefing Paper prepared by the California Environmental Protection Agency. Page 1.
7 - NJDEP MTBE Work Group. December 19, 2000. MTBE in New Jersey's Environment.
8 - Koenigsberg, S. "MTBE: Wild Card in Groundwater Cleanup". *Environmental Protection*. November 1997. Page 26.
9 - Ellis and Gavas. "MTBE: See It, Ye May Well Find It ... and Then What". *LUST Line Bulletin*. Page 13.
10 - Squillace, Zogorski, Wilber and Price. "Preliminary Assessment of the Occurrence and Possible Source of MTBE in Groundwater in the US 1993-1994". *Environmental Science and Technology*. 1996. Pages 1721-1730.

10 Description of Limitations and Conditions for all Tables:

A. Basis for Effluent Limitations and Permit Conditions - General

The effluent limitations and permit conditions in this permit have been developed to ensure compliance with the following:

1. NJPDES Regulations (N.J.A.C. 7:14A),
2. New Jersey Surface Water Quality Standards (N.J.A.C. 7:9B),
3. New Jersey 2000 Integrated Water Quality Monitoring and Assessment Report (Integrated Report),
4. Water Quality Regulations of the Delaware River Basin Commission (N.J.A.C. 7:9B-1.5(b)1),
5. Interstate Environmental Commission (N.J.A.C. 7:9B-1.5(b)2),
6. Wastewater Discharge Requirements (N.J.A.C. 7:9-5.1 et seq.),
7. Existing permit limitations in accordance with N.J.A.C. 7:14A-13.19 and 40 CFR 122.44 (antibacksliding requirements),
8. Permit limitations in accordance with N.J.A.C. 7:9B-1.5(d) (antidegradation requirements),
9. Statewide Water Quality Management Planning Rules (N.J.A.C. 7:15).

Technology based limitations are authorized by Section 301 of the Clean Water Act, 40 CFR 122, N.J.S.A. 58:10A-4, and N.J.A.C. 7:14A-13.2(a)1.ii., 13.3(b), and 13.4. BPJ determinations are authorized by Section 402 (a)(1) of the Clean Water Act.

In accordance with N.J.A.C. 7:14A-13.5, Water Quality Based Effluent Limitations (WQBELs) are imposed when it has been determined that the discharge of a pollutant causes an excursion of criteria specified in the New Jersey Surface Water Quality Standards (NJSWQS), N.J.A.C. 7:9B-1.1 et seq., and the Federal Water Quality Standards, 40 CFR Part 131. WQBELs are authorized by Section 301 of the Clean Water Act, 40 CFR 122, N.J.S.A. 58:10A-4, and N.J.A.C. 7:14A-13.2 and 13.3. The policies used to develop WQBELs are contained in the State and Federal Standards. Specific procedures, methodologies, and equations are contained in the current USEPA "Technical Support Document for Water Quality-based Toxics Control" (TSD) (EPA- 505/2-90-001) and are referenced in N.J.A.C. 7:14A-13.5 and 13.6.

Expression of all effluent limitations is in accordance with N.J.A.C. 7:14A-13.14 and 13.15. Whole effluent toxicity limitations are expressed as a minimum as a percent.

This permit action does not authorize any increase in the concentration or loading of pollutants above those levels authorized under the existing permit. All permit limitations and conditions in this permit action are equal to or more stringent than those contained in the existing permit action. As a result, this permit action satisfies the federal and state anti-degradation regulations at 40 CFR 131.12 and N.J.A.C. 7:9B-1.5(d), and no further anti-degradation analysis is necessary.

B. Basis and Derivation for Effluent Limitations and Monitoring Requirements - Specific

Dilution Credit for all Tables

The Department has not considered dilution effects in the application of any effluent limits in this master GPPC permit renewal. Consideration of site-specific dilution effects is not feasible for a master general permit where effluent limits and conditions need to be streamlined. In addition, the majority of GPPC discharges go to storm sewers where the Department does not typically allow for dilution credit.

Table A

- Remediation discharges into waters classified as FW2-NT, FW2-TM, FW2-TP, SE or SC where strictly petroleum product related constituents are present

Flow

Monitoring for flow is required pursuant to N.J.A.C. 7:14A-13.13 and 13.14 and is consistent with the existing master GPPC permit. If the flow monitoring method is something other than a flow meter, the permittee shall indicate so in its GPPC permit application so that Part III can be changed accordingly.

Total Suspended Solids

The Total Suspended Solids (TSS) limitation for discharges to FW2-NT waters, SE waters, and fresh and saline portions of the Delaware River is based on the existing master GPPC permit pursuant to N.J.A.C. 7:14A-13.19. This daily maximum limitation of 40 mg/L is also consistent with the NJSWQS at N.J.A.C. 7:9B-1.1 et seq. for FW2-NT waters. This limitation is economically and technologically achievable based on the monitoring report form effluent data which shows average TSS levels well below the proposed limitation of 40 mg/L.

The TSS limitation for discharges to FW2-TM and FW2-TP is also based on the existing master GPPC permit pursuant to N.J.A.C. 7:14A-13.19. This daily maximum limitation of 25 mg/L is also consistent with the NJSWQS at N.J.A.C. 7:9B-1.1 et seq. for FW2-TM and FW2-TP waters. This limitation is economically and technologically achievable based on the monitoring report form effluent data.

Petroleum Hydrocarbons

The effluent limitations for petroleum hydrocarbons are retained from the existing master GPPC permit pursuant to N.J.A.C. 7:14A-13.19 and are consistent with N.J.A.C. 7:14A-12.8. Monitoring report form effluent data shows that treatment systems are consistently capable of reducing total petroleum hydrocarbon levels well below the proposed effluent limitations.

Total Organic Carbon

In order to maintain a reasonable treatment efficiency level and in order to protect against pollutants which may be present in various concentrations in the petroleum product discharges but not assigned specific numerical limitations in this permit, the Department has imposed limitations for Total Organic Carbon (TOC). A daily maximum limitation of 20 mg/L is retained from the existing master GPPC permit, pursuant to N.J.A.C. 7:14A-13.19. This limit was originally based on a review of effluent data for facilities with contamination by petroleum products and was originally imposed in the August 11, 1988 General Fuel Clean-up Permit.

pH

The pH range imposed for both fresh and saline waters is retained from the existing master GPPC permit pursuant to N.J.A.C. 7:14A-13.19. These minimum and maximum pH levels are economically and technologically achievable based on the existing monitoring report form results.

Benzene

The existing limitation for benzene is retained from the existing master GPPC permit pursuant to N.J.A.C. 7:14A-13.19 for fresh waters. It should be noted that this daily maximum limit is equivalent to the recommended quantitation level (RQL) for benzene which is the lowest level that certified laboratories can consistently achieve. Based on existing monitoring report form data this limitation is both economically and technologically achievable. This limitation is also consistent with N.J.A.C. 7:14A-12, Appendix B for FW2 waters.

The Department has not differentiated limits between fresh and saline water as was done in the existing GPPC permit as very few facilities discharge to saline waters. This change serves to simplify the general permit. In addition, virtually all benzene effluent points were non-detectable and, of those values that were detected, only two were out of compliance with the limit of 7 μg/L. However, the Department has included a compliance schedule for any dischargers to saline waters allowing up until December 1, 2006 to achieve the 7 μg/L limit. In the interim, the existing daily maximum limit of 50 ug/L will be effective.

Naphthalene

The effluent limitations for naphthalene are retained from the existing master GPPC permit, pursuant to N.J.A.C. 7:14A-13.19. These limitations are economically and technologically achievable as evidenced by existing monitoring report form data which is significantly lower than the proposed naphthalene limitations. These limitations are also consistent with N.J.A.C. 7:14A-12, Appendix B for FW2 waters.

Total Recoverable Lead

The effluent limitations and monitoring requirements for lead are only applicable for those discharges where lead is shown to be detectable in the permittee's GPPC permit application, lead is detectable in other available data, or for discharges associated with the remediation of leaded gasoline.

The effluent limitation for lead has been set at 10 μg/L which is equivalent to the RQL. This is due to the fact that the SWQS for lead is 5.4 μg/L for fresh waters and 8.1 μg/L for saline waters. Given that the Department is not allowing for dilution credit, the SWQS becomes the effluent limit. Because these SWQS are below the RQL, the RQL becomes

the compliance point. The Department has determined that these lead limits are economically and technologically achievable as evidenced by monitoring report form data.

These limits are more stringent than those contained in the existing GPPC permit so they do not become effective until December 1, 2006 thereby allowing a compliance schedule in accordance with N.J.A.C. 7:14A-6.4. Up until December 1, 2006 the existing lead limits of 37 μg/L (monthly average) and 79 μg/L (daily maximum) are applicable.

Methyl *Tert* Butyl Ether

The Department has imposed an MTBE percent removal requirement of 85% in accordance with N.J.A.C. 7:14A-13.19. Influent and effluent monitoring and reporting for MTBE is also imposed in this permit in order to enable tracking and calculation for the MTBE percent removal limitation. Influent and effluent sampling shall be performed with EPA Method 624 as indicated on the effluent limitations table.

An effluent level of 70 μg/L is the Department's goal for effluent MTBE levels where this value is consistent with the drinking water standard pursuant to N.J.A.C. 7:10-1-7 et seq.. The MTBE percent removal limitation of 85% is not appropriate for instances when MTBE influent levels to the treatment system are low. Specifically, if the influent levels of MTBE are comparable to 70 μg/L, it is not appropriate to require the 85% removal requirement. Therefore, application of an MTBE minimum percent removal limitation is dependent on ongoing effluent MTBE levels. To illustrate this point, if the effluent MTBE level is less than or equal to 70 μg/L during a calendar month, the 85% MTBE minimum percent removal limitation does not apply to that discharge. If the MTBE minimum percent removal limitation does not apply, the permittee shall report "Code =N" in its monitoring report form under MTBE minimum percent removal. If the effluent MTBE level is greater than or equal to 70 μg/L for a calendar month, an 85% MTBE minimum percent removal limitation does apply. The permittee shall report the minimum percent removal value on its monitoring report form under MTBE minimum percent removal.

Basis for Selection of Waterbodies Ineligible for Discharge Authorization Under Table A

A listing of waterbodies ineligible for discharge authorization under Table A is included in this master GPPC permit as Table B - Attachment of Part III. Any requests for discharge authorizations to these waterbodies can not be issued under Table A, but may be eligible for issuance under Table B. Table A includes an MTBE percent removal requirement of 85% whereas Table B includes an MTBE effluent limitation of 70 ug/L. This effluent limitation of 70 ug/L is based on the maximum contaminant levels for drinking water pursuant to N.J.A.C. 7:10-1-7 et seq..

The majority of the waterbodies ineligible for discharge authorization under Table A have surface water intakes on the waterbody where the MA7CD10 values at the point of intake are less than 14 cubic feet per second (cfs). Waterbodies which have surface water intakes with an MA7CD10 greater than 14 cfs at the point of intake are not included in this list. This is due to the fact that dilution effects at the point of intake are adequate to ensure that the maximum contaminant level of 70 ug/L for MTBE for drinking water purposes is attained.

Accounting for dilution effects in establishing WQBELs is consistent with the procedures of the US EPA "Technical Support Document for Water Quality-based Toxics Control." Use of this document is in accordance with N.J.A.C. 7:14A-13.6. Typically, the Department calculates a WQBEL where dilution effects at the point of discharge are factored into the equation. However, because the master GPPC permit renewal is written for discharges across the state, it is not appropriate to consider the case-by-case dilution circumstances of each discharge. Therefore, in order to implement the drinking water standard of 70 ug/L, the Department considered dilution effects at the location of the potable water intake. By establishing an effluent limitation of 70 ug/L for any dischargers to waterbodies included in Table B - Attachment of Part III, the Department is assuming zero dilution credit for these dischargers. By assuming zero dilution credit, the drinking water standard is imposed at end-of-pipe thereby ensuring that the values in excess of the drinking water standard will not occur at the potable water intake as a result of this discharger.

The Department reserves the right to deny an individual authorization under the master GPPC permit renewal to any proposed discharges to waterbodies identified in the Department's annual Shellfish Growing Classification Charts

under the following shellfish growing water classification codes: special restricted areas; seasonal areas; prohibited areas; and approved areas. The designated uses for waterbodies classified as SE1 or SC include shellfish harvesting in accordance with N.J.A.C. 7:9B-1.1 et seq. If the Department determines that it can not approve a discharge to a waterbody used for shellfish harvesting under the master GPPC permit renewal, the applicant will be notified of the Department's finding. The Department will also notify the applicant if the discharge can be authorized under an individual NJPDES DSW permit. If the Department can authorize a discharge to a waterbody classified as SE1 or SC under the GPPC permit renewal, the Department will issue such authorization under Table B.

In addition, the Department may also make a case-by-case determination that other discharge authorizations are ineligible for discharge under the conditions of Table A. Table B may be deemed appropriate in circumstances where information is presented to the Department showing that there is a concern that potable groundwater wells are within close proximity to the discharge and may be recharged by the receiving waterbody. Another example would be where the receiving waterbody is used for shellfish harvesting downstream of the proposed discharge. Such determinations will be made on a case-by-case basis.

***tert* Butyl Alcohol**

The Department has imposed both an effluent and influent monitoring requirement for *tert* butyl alcohol (TBA). A promulgated NJSWQS, pursuant to N.J.A.C. 7:9B-1.1 et seq. does not exist for TBA at this time. In addition, TBA is not currently listed as a toxic pollutant at N.J.A.C. 7:14A-4 Appendix A Table II. Because current treatment technologies are not capable of significantly reducing TBA levels on a reliable basis, the Department could not develop a technology based limitation at this time as authorized in N.J.A.C. 7:14A-13.4. As compared to MTBE, there is very little toxicology and other information available for TBA at this time. Therefore, based on all of the above, the Department has imposed both effluent and influent monitoring requirements to assess the levels of TBA and track such levels for possible future development of an effluent limitation. Influent and effluent sampling for TBA shall be performed with EPA Method 624 as indicated in Part IV.

The requirements imposed in this renewal GPPC permit are more comprehensive than those imposed in the existing GPPC permit since the existing GPPC permit only required effluent monitoring for TBA.

Monitoring Frequencies for Flow, TSS, TOC, pH, Petroleum Hydrocarbons, Benzene, Naphthalene, and Total Recoverable Lead (where applicable), MTBE and TBA

A monthly monitoring frequency is specified for all parameters with the exception of petroleum hydrocarbons. A monthly monitoring frequency is consistent with the existing master GPPC permit for flow, TSS, TOC, pH, benzene, naphthalene, MTBE and TBA whereas a quarterly monitoring requirement is consistent with the existing GPPC permit for petroleum hydrocarbons.

Whole Effluent Toxicity

Whole Effluent Toxicity (WET) is the measure of the aggregate effect of an effluent discharge on the receiving water. WET testing in conjunction with individual limits on toxic pollutants ensures the protection of the aquatic community and water quality in general. WET is measured by a toxicity test which is typically conducted on a quarterly basis.

Section 101(a) of the Clean Water Act (CWA) establishes a national policy of restoring and maintaining the chemical, physical and biological integrity of the Nation's waters. In addition, section 101(a)(3) of the CWA and the NJSWQS at N.J.A.C. 7:9B-1.5(a)3 state that the discharge of toxic pollutants in toxic amounts is prohibited. Further, 40 CFR 122.44(d) and N.J.A.C. 7:14A-13.6(a) require that where the Department determines using site-specific WET data that a discharge causes, shows a reasonable potential to cause, or contributes to an excursion above the NJSWQS, the permitting authority must establish effluent limits for WET. In order to satisfy the requirements of the CWA, the NJSWQS and the NJPDES Regulations, the need for a WQBEL for WET was evaluated for discharges eligible under Table A of this master general permit.

Prior to the issuance of the General Gasoline Fuel Cleanup (GFC) permit in September 1988, the Department conducted several acute toxicity tests on discharges resulting from the cleanup of gasoline spills. Results of those tests showed that these discharges did not exhibit acute toxicity. Therefore, no acute toxicity testing requirements were included in the master GPPC permit issued on October 29, 1993 for remediations resulting from gasoline spills.

However, the Department did establish an acute WET effluent limitation and monitoring requirement for remediation projects resulting from contamination by fuel oils, diesel fuel, kerosene, aviation fuel and/or jet fuel in the October 29, 1993 master GPPC permit. This was established at that time due to: (1) the lack of data for such remediation discharges; (2) the lack of toxicity data for aquatic effects on the constituents associated with the fuel products just specified; and (3) the lack of data showing that toxicity resulting from fuel oil additives is adequately removed by any proposed treatment. As a result, acute WET testing requirements were specified for 21 of the 330 sites covered under this permit (6% of the sites) and data was submitted for 12 of the 212 active sites (also 6%). As stated previously, these acute WET requirements were limited to remediation projects resulting from contamination by fuel oils, diesel fuel, kerosene, aviation fuel and/or jet fuel. A total of 59 test results were collected for 12 active sites. Eighty percent of those results indicate no acute toxicity. Further, where some acute toxicity was measured for a particular discharge, it was most commonly observed in an early test very soon after system start up. Later tests results indicative of the ongoing discharge and treatability potential indicated no toxicity. A single test result of this data group, which showed measurable acute toxicity, was deemed unrepresentative of normal operating conditions, and attributed to a problem with use of a specific flocculating agent. Based on this information, continuation of acute WET testing requirements for remediations resulting from contamination by fuel oils, diesel fuel, kerosene, aviation fuel and/or jet fuel was not considered to be warranted.

The Department has also considered the presence of the fuel oxygenate additives MTBE and TBA in gasoline remediations and has evaluated available aquatic toxicity data for such additives. Available toxicity data for TBA shows TBA to exhibit acute toxicity at levels greater than 9700 mg/L which is far greater than the levels of TBA present at GPPC sites. Aquatic toxicity data for MTBE from many sources was reviewed where toxicity due to MTBE does not occur unless there are levels of MTBE present in significant amounts (i.e. the mg/L range). Based on this information, the Department has determined that the 85% MTBE removal requirement imposed for Table A will ensure that effluent values are well below the levels expected to cause toxicity. Therefore, by imposing the 85% removal requirement or the 70 µg/L effluent limitation where appropriate, the Department is limiting MTBE levels and thereby ensuring protection of the receiving waterbody for aquatic toxicity effects. In sum, by imposing such limits, the Department is protecting against degradation of the waterbodies and is therefore consistent with its antidegradation policies and regulations at N.J.A.C. 7:9B-1.5(d) et seq..

Effluent data summarized in the permit summary tables at the end of this fact sheet show primarily non-detectable levels of toxic pollutants. The Department has compared the summaries of effluent data for the 1993 GPPC permit, the 1998 GPPC permit and this 2003 GPPC permit. The data included in the 2003 GPPC permit shows lower levels than the previous two master GPPC permits which indicates that treatment capabilities are improving. Because WET tests performed under the previous GPPC permits did not indicate toxicity effects it is likely that current discharges (which have lower levels of toxics due to improved treatment) are even less likely to show toxicity effects.

Based on the historical data, current data and available literature, the Department has not imposed an acute or chronic WET requirement for Table A. Please note that a WET requirement has been retained for Table D as discussed later.

Table B

- Remediation discharges into waterbodies used for potable water intakes or shellfish harvesting where strictly petroleum product related constituents are present.

Flow, TSS, Petroleum Hydrocarbons, TOC, pH, Benzene, Naphthalene, Total Recoverable Lead (where applicable), *Tert* Butyl Alcohol (TBA) and WET

The rationale for the effluent limitations and monitoring requirements for flow, TSS, petroleum hydrocarbons, TOC, pH, benzene, naphthalene, total recoverable lead (where applicable), TBA and WET for Table B is identical to the discussion for Table A.

Methyl *Tert* Butyl Ether (MTBE)

As discussed above, the Department has imposed an MTBE effluent limitation of 70 ug/L for Table B where Table B applies to those specific waterbodies included in Table B - Attachment of Part III. The MTBE effluent limitation of 70 ug/L is based on the maximum contaminant level drinking water standard.

Influent monitoring for MTBE and MTBE percent removal monitoring is also required to track the efficiency levels of the permittee's treatment system. Influent and effluent sampling shall be performed with EPA Method 624 as indicated on the effluent limitations table.

Table C

- Remediation discharges into waterbodies classified as C1 (Category One) where strictly petroleum product related constituents are present.

Impact of Discharge Approvals to High Water Quality Classifications

Pursuant to N.J.A.C. 7:9B-1.5(d), Category One waters shall be protected from any measurable changes to the existing water quality characteristics that are generally worse than the water quality criteria. However, often times when a pump and treat remediation project is deemed necessary, it is because the facility can not ensure hydraulic control of the contaminated groundwater plume and contaminated groundwater is migrating off-site and will likely impact sensitive receptors. Therefore, in order to ensure approval of these remediation projects in an expeditious manner, the Department has included requirements for remediation discharges to Category One waters in the master GPPC permit renewal. Water quality concerns have been considered for each limited parameter as discussed below where non-detectable limitations have been imposed in certain instances.

It is important to note that short term dewatering and pump test discharges to Category One waters are ineligible for discharge authorization under Table E. Remediation discharges are a different circumstance than short term dewatering or pump test activities. Clean-up under a remediation project may be necessary immediately to prevent more wide-spread contamination of ground water and other discharge options may not be feasible. However, often times other discharge options are available for short term dewatering and pump test activities such as hauling the water off-site and disposing of it at a licensed facility. Therefore, because of the high quality classification of Category One waters and the availability of other disposal options, the Department has determined that it is not appropriate to authorize short term dewatering and pump test activities under Table C.

Flow

Monitoring for flow is required pursuant to N.J.A.C. 7:14A-13.13 and 13.14.

TSS, Petroleum Hydrocarbons, Total Organic Carbon

The effluent limitation for TSS is imposed based on the existing GPPC permit in accordance with N.J.A.C. 7:14A-13.19. Considering current monitoring report form data collected under the existing GPPC permit, permittees can consistently comply with the proposed daily maximum effluent limitation of 25 mg/L; therefore, this limit is economically and technologically achievable. In fact, 80% of TSS effluent data collected under the existing GPPC permit shows non-detectable levels.

Effluent limitations for petroleum hydrocarbons are imposed in accordance with N.J.A.C. 7:14A-13.19 where these limits are consistent with N.J.A.C. 7:14A-12.8. Based on current monitoring report form data, current treatment technology can consistently treat total petroleum hydrocarbons to non-detectable or trace levels.

Effluent limitations for total organic carbon are imposed in accordance with N.J.A.C. 7:14A-13.19. Based on current monitoring report form data, current treatment technology can consistently treat to the proposed limit of 20 mg/L where current data shows primarily non-detectable or trace levels.

pH

The effluent limits for minimum and maximum pH for Category 1 waters are based on N.J.A.C. 7:9B-1.1 et seq. for FW2 waters. The in-stream pH range has been imposed as minimum and maximum effluent limits due to the high quality characteristics of Category 1 waters.

Benzene, Total Recoverable Lead (where applicable)

Due to the low in-stream NJSWQS for benzene and total recoverable lead as well as the "no measurable change" criteria for Category 1 waters pursuant to N.J.A.C. 7:9B-1.5(d)6.iii., non-detectable effluent limitations are appropriate pursuant to N.J.A.C. 7:9B-1.5(e)7. Therefore, the Recommended Quantitation Levels (RQLs) have been established as effluent limitations. RQLs are levels which certified laboratories can routinely attain as method detection levels. As such any value below the RQL is considered to be non-detectable.

Naphthalene

Although there is no NJSWQS for napthalene at this time, napthalene is listed as a toxic pollutant at N.J.A.C. 7:14A-4 Appendix A Table II. Based on the fact that napthalene is toxic as well as the "no measurable change" criteria for Category 1 waters, pursuant to N.J.A.C. 7:9B-1.5(d)6iii, the Department has determined that a non-detectable effluent limitation is appropriate. Therefore, the applicable RQL of 8 ug/L has been imposed as an effluent limitation.

MTBE

The Department has imposed an MTBE effluent limitation of 70 ug/L based on the maximum contaminant level drinking water standard. As discussed previously for Table A, available aquatic toxicity data shows MTBE to be toxic to aquatic organisms at levels significantly greater than 70 ug/L. Influent monitoring for MTBE and MTBE percent removal monitoring is also required to track the efficiency levels of the permittee's treatment system. Influent and effluent sampling shall be performed with EPA Method 624 as indicated on the effluent limitations table.

TBA

Consistent with the rationale described for Tables A and B, the Department has imposed a monitoring requirement for TBA to assess the discharge levels present. A promulgated NJSWQS, pursuant to N.J.A.C. 7:9B-1.1 et seq., does not exist for TBA at this time nor does a promulgated drinking water standard. Effluent sampling for TBA shall be performed with EPA Method 624 as indicated on the effluent limitations table.

Table D

- Remediation discharges into waters classified as FW2-NT, FW2-TM, FW2-TP, SE or SC where other metals, volatile organic, acid extractable or base/neutral compounds are present in addition to petroleum product related constituents

Flow, TSS, TPH, TOC, pH, Benzene, Naphthalene, Total Recoverable Lead (where applicable) and *Tert* Butyl Alcohol (TBA)

The rationale for the effluent limitations and monitoring requirements for flow, TSS, TPH, TOC, pH, benzene, naphthalene, total recoverable lead (where applicable), MTBE and TBA for Table D is identical to the discussion for Table A.

MTBE

The Department has imposed an MTBE effluent limitation of 85% removal for Table D in accordance with N.J.A.C. 7:14A-13.19. The rationale for this limit is consistent with the rationale discussed above for Table A. Influent and effluent monitoring and reporting for MTBE is also imposed in this permit in order to enable tracking and calculation for the MTBE percent removal limitation. Influent and effluent sampling shall be performed with EPA Method 624 as indicated on the effluent limitations table.

In the event that an applicant qualifies for discharge under Table D but to a waterbody that is identified in Table B - Attachment of Part III, the Department may deny authorization of such discharge under Table D. Specifically, if the request for authorization application shows that MTBE can be present in the effluent at levels greater than 70 µg/L, the Department could deny the authorization since the waterbodies identified in Table B - Attachment of Part III can not receive discharges with MTBE levels greater than 70 ug/L. This determination will be handled on a case-by-case basis.

Other Metals, Volatile Organics, Acid Extractables, or Base Neutral Compounds Present

The Department is continuing to include the authorization of discharges that contain these parameters in the master GPPC permit renewal since there are times that additional parameters are present in addition to petroleum related constituents. It is important to note that any applicant requesting authorization under Table D of the GPPC permit must have a remediation or dewatering discharge where petroleum related constituents are the primary pollutants of concern; however, one or more additional metals, volatile organics, acid extractables or base/neutral compounds may also be present. Prior to 1998 if additional non-petroleum related constituents were detected in an application for the existing master GPPC permit, the permittee would be ineligible for a general permit authorization and would be required to seek an individual NJPDES/DSW permit which would incorporate a requirement for the non-petroleum related constituent. The issuance of an individual NJPDES/DSW permit takes a considerably longer period of time as that related to a general permit authorization and, for most pollutants, the individual NJPDES permit simply contained the applicable limits at N.J.A.C. 7:14A-12, Appendix B that are included in this permit. By including this alternate discharge scenario within the master GPPC permit renewal, the Department can issue more NJPDES/DSW permits in an expeditious manner thereby expediting remediation projects with no sacrifice in protection of the water resource.

In addition, the Department may choose to authorize a dewatering discharge under Table D on a case-by-case basis. The Department will consider such factors as the feasibility of meeting effluent limits, the level of Department oversight, and the availability of other discharge options. Given the environmental benefit of ensuring that pumped groundwater remains in the same aquifer, the Department has determined that this option is appropriate. Any such approval will be required to comply with a once per four day monitoring requirement. The Department will review applications for dewatering discharges on a case-by-case basis and, if the Department determines that the effluent limits can not be attained, it reserves the right to deny authorization to discharge under Table D.

The effluent limitations for other metals, volatile organics, acid extractables, or base neutral compounds are retained from the existing GPPC permit in accordance with N.J.A.C. 7:14A-13.19. These limits were originally based on N.J.A.C. 7:14A-12, Appendix B for either FW2 or SE or SC waters depending on the classification of the receiving waterbody. Many of these effluent limits are equivalent to RQLs.

In completing the request for authorization application the permittee shall ensure that its effluent data for any limited parameter(s) is sampled at detection levels as sensitive as the RQLs specified in Table D – Attachment. Monthly monitoring is required for discharges of remediated groundwater consistent with the other limited parameters in this GPPC renewal.

Whole Effluent Toxicity (WET)
- Requirements applicable only to those dischargers where one or more metals are present:

Section 101(a) of the CWA establishes a national policy of restoring and maintaining the chemical, physical and biological integrity of the Nation's waters. In addition, section 101(a)(3) of the CWA and the NJSWQS at N.J.A.C. 7:9B-1.5(a)3 state that the discharge of toxic pollutants in toxic amounts is prohibited. Further, 40 CFR 122.44(d) and N.J.A.C. 7:14A-13.6(a) require that where the Department determines using site-specific WET data that a discharge causes, shows a reasonable potential to cause, or contributes to an excursion above the SWQS, the permitting authority must establish effluent limits for WET. In order to satisfy the requirements of the CWA, the NJSWQS and the NJPDES Regulations, the need for a WQBEL for WET was evaluated for this discharge.

There are two types of WET tests, acute toxicity testing which measures only the lethal effects (mortality) of the effluent on the test organisms, and chronic toxicity testing which measures the lethal and sublethal (ie. growth and/or reproduction) of the effluent on the test organisms. The type of WET test required for a particular facility is determined by evaluating the mixing characteristics of the effluent (ie dilution factor) in the receiving water. The acute mixing zone and the chronic mixing zone are compared, and whichever results in a more stringent limit is used to regulate the discharge.

The existing GPPC master permit included WET requirements for those discharges eligible under Table D that contained metals in the discharge at levels comparable to NJSWQS. As a result, the Department does have existing WET data for these discharges for consideration in this GPPC master permit renewal.

WQBELs for acute and chronic WET were calculated in accordance with N.J.A.C. 7:14A-13.6 and USEPA's "Technical Support Document for Water Quality Based Toxics Control" (EPA/505/2-90-001), March 1991 (TSD).

Since the master GPPC permit renewal does not consider dilution effects, these limits are developed using an acute dilution factor (Df_a) of 1 and a chronic dilution factor (Df_c) of 1. In many instances, dischargers authorized under the GPPC permit discharge to a municipal storm sewer into which other discharges may contribute pollutants which when discharged together into the receiving water could potentially cause an exceedance of the WET narrative standard. In addition, use of one dilution factor serves to simplify and streamline the master general permit.

The Df_a and Df_c were then used to determine acute and chronic Wasteload Allocations (WLAs) consistent with N.J.A.C. 7:14A-13.5, using a steady state model, as specified in section 5.4.1 of the TSD. CoA nsistent with recommendations in the TSD, values of 0.3 acute toxic unit (TU_a) and 1.0 chronic toxic unit (TU_c) were used to interpret the narrative water quality criteria for WET contained at N.J.A.C. 7:9B-1.14(c) (see Response to Comments 13-74 through 13-89, 29 NJR 1861, (May 5, 1997)). The acute WLA (WLA_a) was translated to equivalent chronic toxic units (WLA_{ac}), to enable comparison of acute and chronic WET limits, by multiplying the WLA_a by a default acute to chronic ratio (ACR) of 10.

The Department evaluated available chronic WET data collected under the existing GPPC permit. Chronic WET limits were applied to those sites issued under Table D where metals were present. Given that the GPPC permit covers similar discharges and chronic WET limits were only applied if metals were present, the Department has determined that this data is representative for consideration in retaining these requirements in this renewal permit. While much of

the data indicated no toxicity (i.e. results of >100%), some data showed some toxicity. As a result the Department has retained the chronic WET limitation in this master GPPC permit renewal.

For new discharges only (i.e. not renewal authorizations): In accordance with N.J.A.C. 7:14A-6.4(a) and 13.21(b), a schedule to achieve compliance with the new chronic WET WQBEL has been included in this permit and is applicable for new dischargers. Interim monitoring and reporting requirements have been included based on N.J.A.C. 7:14A-6.2(a)14. Specifically, monitoring only is required for the first three years of the discharge authorization. After that time the referenced limit is imposed.

For discharges to fresh waters: The test species method to be used for chronic testing shall be the *Ceriodaphnia dubia*, Survival and Reproduction Test, 40 CFR 136.3, method 1002.0 and will be indicated in Part III of the individual authorization. Such selection is based on the freshwater characteristics of the receiving stream, the existing permit (if applicable), N.J.A.C. 7:9B-1.5 and the Department's "Chronic Toxicity Testing Specifications for Use in the NJPDES Permit Program" document. This document is included as Appendix A of this permit, in accordance with N.J.A.C. 7:14A-6.5, 11.2(a)2.iv. and 40 CFR Part 136.

For discharges to saline waters: The test species method to be used for chronic testing shall be the *Mysidopsis bahia*, Survival, Growth, and Fecundity Test, 40 CFR 136.3, method 1007.0 and will be indicated in Part III of the individual authorization. Such selection is based on the saline characteristics of the receiving stream, the existing permit (if applicable), N.J.A.C. 7:9B-1.5 and the Department's "Chronic Toxicity Testing Specifications for Use in the NJPDES Permit Program" document. This document is included as Appendix A of this permit, in accordance with N.J.A.C. 7:14A-6.5, 11.2(a)2.iv. and 40 CFR Part 136.

The monitoring frequency for chronic toxicity testing shall be quarterly.

The Toxicity Reduction Implementation Requirements (TRIR) are included in accordance with N.J.A.C. 7:14A-13.17(a), 7:14A-6.2(a)5 and recommendations in Section 5.8 of the TSD. The requirements are necessary to ensure compliance with the applicable WET toxicity limitation on its effective date and to expedite compliance with the WET toxicity limitation should exceedances of the WET limitation occur. As included in section B.1 of the TRIR requirements, the initial step of the TRIR is to identify the variability of the effluent toxicity and to verify that a consistent toxicity problem does in fact exist.

Effluent samples for conducting WET testing are to be collected after the last treatment step, consistent with the collection location for all other parameters.

Table E

- Short term dewatering or pump test discharges into waters classified as FW2-NT, FW2-TM, FW2-TP, SE or SC where strictly petroleum related constituents are present

Flow, TSS, Petroleum Hydrocarbons, TOC, pH, Benzene, Naphthalene, Total Recoverable Lead (where applicable), *tert* Butyl Alcohol

The rationale for the effluent limitations for Flow, TSS, TOC, petroleum hydrocarbons, pH, benzene, naphthalene, and total recoverable lead (where applicable) for Table E are consistent with the discussion for Table A. As in the existing master GPPC permit, only daily maximum limitations are applied due to the short term nature of these activities. Monthly average reporting is also required.

Influent and effluent monitoring for TBA is required consistent with the rationale described for Tables A – D.

MTBE

The Department has imposed an MTBE effluent limitation of 85% removal consistent with Tables A and D. The Department did not differentiate regulation of MTBE in Table E for those waterbodies which have a potable water intake as was done for Tables A and B. As a result, the Department reserves the right to deem a request for authorization ineligible if the proposed discharge is to a water body identified in Table B - Attachment of Part III and if MTBE effluent levels are greater than 70 ug/L.

Monitoring Frequency

Due to the short term and intermittent nature of dewatering and pump test activities, the monitoring frequency is set at once per four days. The permittee is required to sample at least once during the discharge event.

Effective Date

The Department will authorize the dewatering or pump test portion of this permit for the first six months following the effective date of the individual authorization or before the expiration of the master general permit, whichever comes first. After such time the individual permit authorization will administratively expire. The Department may issue authorizations for a longer term on an as needed basis but any such period will not extend past the permit expiration date. Please note that the permittee may specify its effective date during the application process. For example, if a permittee expects to conduct a dewatering discharge activity in May, but submitted the application in February where this chosen effective date is specified, the Department can issue the individual permit authorization with a May 1 effective date. This is further discussed in the application checklist for a request for authorization under the B4B permit.

C. Recommended Quantitation Levels Policy (RQLs):

The Department developed the RQLs to insure that useful data is provided to the Department in order to characterize the discharger's effluent. The Department recommends that the permittee achieve detection levels that are at least as sensitive as the RQLs found in Part III. The Department has determined that the quantitation levels listed therein can be reliably and consistently achieved by most state certified laboratories for most of the listed pollutants using the appropriate procedures specified in 40 CFR Part 136. FAILURE TO ATTAIN A QUANTITATION LEVEL AS SENSITIVE AS A LISTED RQL IS NOT A VIOLATION OF THE PERMIT, BUT DOES TRIGGER SOME ADDITIONAL REPORTING REQUIREMENTS FOR THE PERMITTEE AS SPECIFIED IN PART IV OF THE PERMIT.

D. Reporting Requirements:

All data requested to be submitted by this permit shall be reported on the Discharge Monitoring Reports (DMRs) as appropriate and submitted to the Department as required by N.J.A.C. 7:14A-6.8(a).

E. General conditions:

In accordance with N.J.A.C. 7:14A-2.3 and 6.1(b), specific rules from the New Jersey Administrative Code have been incorporated either expressly or by reference in Part I and Part II.

F. Outfall Tag:

Pursuant to N.J.A.C. 7:14A-6.2(a)9, the permittee shall ensure that a tag is present to mark the location of the outfall pipe on or before the start of discharge.

G. Operator Classification Number:

The operator classification requirement is no longer included in the individual requests for authorization. To obtain or determine the appropriate licensed operator classification for the treatment works utilized in each individual authorization, the permittee shall contact the Bureau of Engineering North at (609) 292-6894 or the Bureau of Engineering South at (609) 984-6840. The Bureau of Engineering North has jurisdiction over the counties of Middlesex, Union, Essex, Hudson, Bergen, Passaic, Sussex, Morris, Warren, Somerset and Hunterdon whereas the Bureau of Engineering South has jurisdiction over the counties of Monmouth, Ocean, Atlantic, Mercer, Burlington, Camden, Cape May, Cumberland, Gloucester and Salem.

H. Flow Related Conditions:

Groundwater remediations such as those regulated under this permit are not included in the applicable Water Quality Management Plan and/or Wastewater Management Plan for each individual request for authorization.

11 Variances to Permit Conditions:

Procedures for modifying a water quality based effluent limitation are found in the New Jersey Surface Water Quality Standards, N.J.A.C. 7:9B-1.8 and 1.9. If a water quality based effluent limitation has been proposed in this permit action, the permittee may request a modification of that limitation in accordance with N.J.A.C. 7:14A-11.7(a). This request must be made prior to the close of the public comment period. The information that must be submitted to support the request may be obtained from the Division of Watershed Management at (609) 633-7020.

12 Description of Procedures for Reaching a Final Decision on the Draft Action:

Please refer to the procedures described in the public notice that is part of the draft permit. In addition to the DEP Bulletin, the public notice for this permit action is published in the following newspapers which represent the counties indicated:

Newspaper	**County**
Press of Atlantic City	Atlantic and Cape May
The Record	Bergen
Burlington County Times	Burlington
Courier Post	Camden
Daily Journal	Cumberland
Star Ledger	Essex
Gloucester County Times	Gloucester and Salem
Democrat	Hunterdon
Jersey Journal	Hudson
The Times	Mercer
Home News and Tribune	Ocean, Middlesex and Monmouth
Asbury Park Press	Ocean, Middlesex and Monmouth
Daily Record	Morris
Ocean County Observer	Ocean, Middlesex and Monmouth
North Jersey Herald News	Passaic and Bergen
The Express	Warren
South Jersey Newspapers	Gloucester and Salem
Today's Sunbeam	Gloucester and Salem
Courier News	*Somerset and Union*
New Jersey Herald	*Sussex*

13 Contact Information

If you have any questions regarding this permit action, please contact Susan Rosenwinkel or Bela Mankad, Bureau of Point Source Permitting – Region 2 at either (609) 292-4860 or via e-mail at susan.rosenwinkel@dep.state.nj.us or bela.mankad@dep.state.nj.us.

14 Data Summary

Wastewater data was summarized for the period beginning on August 2000 and ending on March 2003. There were 120 sites active within this period. Average values do not consider non-detectable quantities. Values that were out of compliance are not considered in the average calculations.

Parameters included in Tables A, B, C, D and E

Parameter	Wastewater Data	Parameter	Wastewater Data
Total Suspended Solids, mg/L	average - 9.77 maximum - 40 # detect - 372 # non-detect - 1501 % non-detect - 80% # out of compliance - 10	Benzene, µg/L	average - 1.14 maximum - 5.1 # detect - 53 # non-detect - 1829 % non-detect - 97.2% # out of compliance - 2
Petroleum Hydrocarbons, mg/L	average - 1.537 maximum - 10 # detect - 84 # non-detect - 794 % non-detect - 90.4% # out of compliance - 0	Naphthalene, µg/L	average - 3.72 maximum - 20.6 # detect - 71 # non-detect - 1812 % non-detect - 96.2% # out of compliance - 2
Total Organic Carbon, mg/L	average - 3.43 maximum - 20 # detect - 830 # non-detect - 1054 % non-detect - 56% # out of compliance - 1	Total Recoverable Lead, µg/L	average - 8.54 maximum - 36 # detect - 127 # non-detect - 183 % non-detect - 59% # out of compliance - 2
MTBE - Effluent, µg/L	average - 20.4 maximum - 2510 # detect - 536 # non-detect - 1354 % non-detect - 71.5% # out of compliance - 0	MTBE - Influent, µg/L	average - 2982 maximum - 38,100 # detect - 1588 # non-detect - 232 % non-detect - 12.7% # out of compliance - N/A
Chronic WET, %	# < 61% - 10 # 61 - 100% - 26 # >100% - 5		

The following conclusions can be drawn from the existing data:

- In comparing effluent data to effluent limits, very few data points are out of compliance.
- The majority of the effluent points are non-detectable.
- MTBE influent levels are significantly greater than MTBE effluent levels which indicates that treatment systems are proving capable of removing MTBE.
- Chronic toxicity data is available for six sites. This data ranges from 6.5% to >100%. This data supports the retention of the chronic toxicity requirement for Table D.

Summary of Table D Data

Wastewater data was summarized for the period beginning on August 2000 and ending on March 2003 for those pollutants covered under Table D in the existing permit. Average values do not consider non-detectable quantities.

Pollutant (All units are in μ,g/L)	Number of Non-Detect Values	Number of Detected Values	Maximum	Average	Number of Sites that Include Limits for this Pollutant
1,1,1 Trichloroethane	25	1	1.1	1.1	3
1,1,2,2 Tetrachloroethane	34	1	0.33	0.33	2
1,1,2 Trichloroethane	1	2	0.3	0.3	1
1,1 Dichloroethane	23	1	0.33	0.33	1
1,1 Dichloroethylene	23	1	0.5	0.5	2
1,2 Dichlorobenzene	37	0	<2.2	--	2
1,2 Dichloroethane	37	1	1.9	1.9	5
1,2 trans dichloroethylene	2	1	0.34	0.34	1
1,4 Dichlorobenzene	2	0	<0.25	--	1
2,4 Dimethyl phenol	14	0	<4.0	--	1
2,4 Dinitrotoluene	32	0	<2.6		2
4 Nitrophenol	35	0	<2.6	--	2
Aluminum	0	2	23.7	18	1
Anthracene	35	0	<2.6	--	2
Arsenic	49	10	35	8.3	5
Benzo (a) anthracene	49	0	<2.6	--	3
Benzo (a) pyrene	35	0	<2.6	--	2
Benzo (b) fluoranthene	3	0	<0.34	--	1
Benzo (k) fluoranthene	32	0	<2.6	--	1
bis 2 ethyl hexyl phthalate	31	14	7.6	5.7	2
Butyl benzyl phthalate	29	3	1.9	1.6	1
Cadmium	41	4	2.5	1.5	3
Carbon Tetrachloride	5	0	<0.39	--	2
Chlorobenzene	32	0	<2	--	1
Chloroethane	24	0	<0.65	--	2
Chloroform	35	0	<2	--	1
Chromium	63	11	37.9	8.7	6
Chrysene	35	0	<26	--	2
Copper	52	20	141	8.6	6
Cyanide	25	8	69	32	1
di benzo (ah) anthracene	32	0	<2.6	--	1
Fluoranthene	48	1	11.3	2.14	3
Fluorene	46	0	<2.3	--	2
indeno (1,2,3 cd) pyrene	35	0	<2.6	--	1
Mercury	35	0	<5	--	2
Methyl chloride	32	0	<2	--	1
Nickel	42	19	27	6.7	5
Pentachlorophenol	32	0	<4.8	--	1
Phenanthrene	74	4	6.9	4.2	4
Phenol	45	4	19	4.1	3
Pyrene	48	1	6.1	1.57	2
Selenium	35	0	<9	--	1
Silver	31	1	3.6	3.6	1
Tetrachloroethylene	58	1	0.38	0.38	5
Trichloroethylene	31	3	10.4	4.2	4
Vinyl Chloride	24	0	<0.33	--	2
Zinc	42	44	130	26	5

15 Permit Summary Table

Unless otherwise noted all effluent limitations are expressed as maximums. Dashes (--) indicate there is no effluent data, no limitations, or no monitoring for this parameter depending on the column in which it appears.

PARAMETER	UNITS	AVERAGING PERIOD	WASTEWATER DATA*	EXISTING LIMITS	TABLE A - FINAL LIMITS	TABLE B - FINAL LIMITS	TABLE C - FINAL LIMITS	TABLE D - FINAL LIMITS	TABLE E - FINAL LIMITS
Flow	GPD	Monthly Avg. Daily Max. # detected	9899 481527 1898	MR MR	MR MR	MR MR	MR MR	MR MR	MR MR
Total Suspended Solids (TSS)	mg/L	Monthly Avg. Daily Max. # detected # non-detect	9.97 40 372 1501	MR 40 (1)	MR 40 (1)	MR 40 (1)	MR 25	MR 40 (1)	MR 40 (1)
Petroleum Hydrocarbons	mg/L	Monthly Avg. Daily Max. # detected # non-detect	1.537 10 84 794	10 15	10 15	10 15	10 15	10 15	10 15
Total Organic Carbon	mg/L	Monthly Avg. Daily Max. # detected # non-detect	3.43 20 830 1054	MR 20	MR 20	MR 20	MR 20	MR 20	MR 20
pH Range	S.U.	Daily Min. Daily Max. # data # non-detect	6.0* 9.0* 1001	6.0 (2) 9.0 (2)	6.0 9.0	6.0 9.0	6.5 8.5	6.0 9.0	6.0 9.0
Benzene	mg/L	Monthly Avg. Daily Max. # detected # non-detect	1.14 5.1 53 1829	MR- fresh waters 7.0- fresh waters (3)	MR 7.0	MR 7.0	MR 7.0	MR 7.0	MR 7.0
Naphthalene	mg/L	Monthly Avg. Daily Max. # detected # non-detect	3.72 20.6 71 1812	22 59	22 59	22 59	MR 8.0	22 59	22 59
Effluent MTBE	mg/L	Monthly Avg. Daily Max. # detected # non-detect	20.4 2510 536 1345	MR MR (4)	MR MR	MR 70	MR 70	MR MR	MR MR
Influent MTBE	mg/L	Monthly Avg. Daily Max. # detected # non-detect	2982 38,100 1588 232	MR MR	MR MR	MR MR	MR MR	MR MR	MR MR
MTBE Percent Removal	%	Mo. Avg. Min. # < 85 # 85 - 100 # >100	-- 64 302 142	85 (5)(6)	85 (6)	MR	MR	85 (6)	85 (6)

PARAMETER	UNITS	AVERAGING PERIOD	WASTEWATER DATA*	EXISTING LIMITS	TABLE A - FINAL LIMITS	TABLE B - FINAL LIMITS	TABLE C - FINAL LIMITS	TABLE D - FINAL LIMITS	TABLE E - FINAL LIMITS
Effluent TBA	mg/L	Monthly Avg. Daily Max. # detected # non-detect	1.736 41.4 596 1287	MR MR	MR MR	MR MR	MR MR	MR MR	MR MR
Influent TBA	mg/L	Monthly Avg. Daily Max.	-- --	MR MR	MR MR	MR MR	MR MR	MR MR	MR MR
Total Recoverable Lead**	µg/L	Monthly Avg. Daily Max.. # detected # non-detect	8.54 36 127 183	37 (7) 79 (7)	MR 10	MR 10	MR 10	MR 10	MR 10
Chronic Toxicity, IC25	%	Minimum	--	--	--	--	--	61(8)	--
Other Metals, Volatile Organics, Base/Neutral Compounds, Acid Extractables	µg/L	Monthly Avg. Daily Max..	See Table	See Attachment D of Part III	N/A	N/A	N/A	See Attachment D of Part III	N/A

Footnotes and Abbreviations:
MR Monitor and report only

* Data represents 102 sites for the time period from August 2000 through March 2003. Average values only consider detectable values and do not consider any points that were out of compliance. See previous chart for more detail regarding points out of compliance.
** Lead data represents 25 sites. Limit is only applicable if lead is present at levels comparable to the NJSWQS. For individual authorizations, the daily maximum limit of 10 µg/L will become effective on December 1, 2006.

(1) For Tables A, B, D and E, the daily maximum TSS limit is 25 mg/L for FW2-TM and FW2-TP waters.
(2) For Table C, the daily minimum limit is 6.5 standard units and the daily maximum limit is 8.5 standard units.
(3) For Tables A, B and D and if saline waters, the daily maximum benzene limit is set at 50 µg/L.
(4) For Tables B and C, the daily maximum MTBE effluent limit is set at 70 µg/L.
(5) For Tables B and C, there is only a minimum MTBE percent removal reporting requirement.
(6) For Tables A, D and E: During a monitoring period where MTBE effluent is less than 70 µg/L, the permittee is not required to comply with the MTBE percent removal requirement.
(7) For Table C, the daily maximum lead limit is set at 10 µg/L.
(8) Limit is only applicable if one or more metals are present in quantities comparable to or greater than NJSWQS.

16 Contents of the Administrative Record

The following items are used to establish the basis of the Draft Permit:

1. 33 U.S.C. 1251 et seq., Federal Water Pollution Control Act. [C]
2. 40 CFR Part 131, Federal Water Quality Standards. [A] [C]
3. 40 CFR Part 122, National Pollutant Discharge Elimination System. [C]
4. N.J.S.A. 58:10A-1 et seq., New Jersey Water Pollution Control Act. [A] [B]
5. N.J.A.C. 7:14A-1 et seq., New Jersey Pollutant Discharge Elimination System Regulations. [A] [B]
6. N.J.A.C. 7:9B-1 et seq., New Jersey Surface Water Quality Standards. [A] [B]
7. N.J.A.C. 7:9-5.1 et seq., Wastewater Discharge Requirements. [A] [B]
8. N.J.A.C. 7:15, Statewide Water Quality Management Planning Rules. [A] [B]
9. N.J.A.C. 7:14C, Sludge Quality Assurance Regulations. [B]
10. "Field Sampling Procedures Manual", published by the NJDEP. [A]
11. "Discharge Monitoring Report (DMR) Instructional Manual", published by the NJDEP. [A]
12. "EPA Technical Support Document for Water Quality-based Toxics Control", EPA/505/2-90-001, March 1991. [A]
13. New Jersey 2002 Integrated Water Quality Monitoring and Assessment Report (Integrated Report). [A] [B]
14. Interstate Environmental Commission Regulations, N.J.S.A. 32:18-1 et seq.
15. Delaware River Basin Commission: Administrative Manual – Part III Water Quality Regulations.
16. NJPDES/DSW General Petroleum Product Cleanup (GPPC) Permit No. NJ0102709 issued October 29, 1993 and effective November 1, 1993.
17. NJDEP NJPDES/DSW General Groundwater Fuel Cleanup (GFC) Permit No.NJ0070122. Issued September 26, 1988. Effective November 1, 1988.
18. NJPDES/DSW Discharge Monitoring Reports dated August 2000 through March 2003 from facilities issued the GPPC authorization.
19. Whole effluent toxicity data from 18 retail gasoline stations or garages issued individual NJPDES/DSW permits from period 1993 - 1998.
20. USEPA. April 1988. Cleanup of Releases from Petroleum Underground Storage Tanks: Selected Technologies. Washington, D.C.:(EPA/530/UST-88/001).
21. USEPA. June 1989. Model NPDES Permit for Discharges Resulting from the Cleanup of Gasoline Released from Underground Storage Tanks. Washington, D.C.
22. Kramer W., and T. Hayes. 1987. New Jersey Geological Survey Technical Memorandum 87-4, "Water Soluble Phase of Number 2 Fuel Oil: Results of a Laboratory Mixing Experiment". New Orleans, LA: National Meeting for the American Public Health Association.
23. Kramer W., and T. Hayes. 1987. New Jersey Geological Survey Technical Memorandum 87-5, "Water Soluble Phase of Gasoline: Results of a Laboratory Mixing Experiment". New Orleans, LA: National Meeting for the American Public Health Association.
24. USEPA. June 1987. Process, Coefficients, and Models for Simulating Toxic Organics and Heavy Metals in Surface Water. Washington, D.C.:(EPA/600/3-87/015). pages 258-269.
25. N.J.A.C. 7:18 et seq., Regulations Governing Laboratory Certification and Standards of Performance.
26. Harold L. Bergman, Richard A. Kimerle, Alan W. Make, Setac editors. 1986. Environmental Hazard Assessment of Effluents. Program Press.
27. Quenten H. Pickering and Croswell Hendersen. September 1966. "Acute Toxicity of Some Important Petrochemicals to Fish". Journal WPCF.
28. US Department of Interior. 1986. Manual of Acute Toxicity: Interpretation and Data Base for 410 Chemicals and 66 Species of Freshwater Animals. Washington, D.C.:Resource Publication 160.
29. USEPA November 1979. Toxicology Handbook, Mammalian and Aquatic data. Washington, D.C.:EPA-540/9-79-003.
30. New Jersey Drinking Water Quality Institute. September 1994. Maximum Contaminant Level Recommendations for Hazardous Contaminants in Drinking Water. Page A-4.

Contents of the Administrative Record (continued)

31. California Environmental Protection Agency. April 1997. MTBE Briefing Paper prepared by the California Environmental Protection Agency. Page 1.
32. US EPA. December 1997. Drinking Water Advisory: Consumer Acceptability Advice and Health Effects Analysis on Methyl Tertiary-Butyl Ether (MtBE). (EPA-822-F-97-009) Page 6.
33. Zogorski, J., A. Morduchowitz, A. Baehr, B. Bauman, D. Conrad, R. Drew, N. Korte, W. Lapham, J. Pankow, E. Washington. September 1996. Fuel Oxygenates and Water Quality: Current Understanding of Sources, Occurrence in Natural Waters, Environmental Behavior, Fate and Significance. Page ES-1.
34. Koenigsberg, S. "MTBE: Wild Card in Groundwater Cleanup". *Environmental Protection*. November 1997. Page 34. Ellis and Gavas. "MTBE: See It, Ye May Well Find It ... and Then What". *LUST Line Bulletin*. Page 13.
35. Preliminary Assessment of the Occurrence and Possible Source of MTBE in Groundwater in the US 1993-1994.
36. A presentation by Pacific Environmental Group, Inc. Methyl tert-butyl ether (MtBE): Fate and Remediation.
37. Windholz, M.W. (ed). 1983. "The Merck Index," 10th ed. (Rahway, NJ: Merck & Co., Inc.).
38. Montgomery, J.H. 1996. "Groundwater Chemicals Desk Reference, " (Boca Raton, FL: CRC Press).
39. N.J.A.C. 7:10-1-7 et seq., the NJ Drinking Water Standards.
40. Squillace, Zogorski, Wilber and Price. "Preliminary Assessment of the Occurrence and Possible Source of MTBE in Groundwater in the US 1993-1994". *Environmental Science and Technology*. 1996. Pages 1721-1730.
41. NJDEP, MTBE Work Group. December 19, 2000. MTBE in New Jersey's Environment.

Footnotes:

[A] Denotes items that may be found in the NJPDES/DSW Administrative Record Library located in the NJDEP Central File Room, 401 East State Street, Trenton, New Jersey.

[B] Denotes items that may be found on the New Jersey Department of Environmental Protection (NJDEP) website located at "http://www.state.nj.us/dep/".

[C] Denotes items that may be found on the United States Environmental Protection Agency (USEPA) website at "http://www.epa.gov/".